

Claims:

1. An architecture of components to provide for two-way data communication between at least one central modem and a set of client modems attached at the distal ends of a in-building coax distribution network, the distribution network adapted to distribute cable television signals, the architecture comprising:

- a) At least one signal amplifier for amplifying television signals in a first frequency band;
- b) at least one central modem for transmitting data to the set of client modems for receiving upstream transmissions from individual client modems, the upstream and downstream transmissions occurring in frequency bands above the first frequency band;
- c) at least one network access device for
 - a. transmitting data upstream from one of the at least one central modem to a network, the central modem having received the data transmission from one of the client modems and the client modem having received the data from a device downstream of the client modem, and
 - b. receiving downstream transmissions of data from the network for conveying to the central modem which in turn conveys the data to the client modems for use by at least one device downstream of a client modem;
- d) at least one diplexer for combining an output from one of the at least one signal amplifiers with the upstream and downstream transmissions between the at least one central modem and the client modems.

2. The architecture of claim 1 wherein the transmission conveyed downstream from the at least one network access device to the at least one central modem undergoes a protocol conversion between the network access device and the central modem.

3. The architecture of claim 1 wherein a first network access device is in communication with a first central modem which is in communication with a first diplexer and a second diplexer, the first diplexer connected to an output of one of the at least one signal amplifier and to a first distribution network with a first set of client modems, the second
5 diplexer connected to an output of one of the at least one signal amplifiers and to a second distribution network with a second set of client modems.

4. The architecture of claim 1 wherein a first network access device is in communication with:

- 10 a) a first central modem which is connected to a first diplexer, the first diplexer connected to an output of one of the at least one signal amplifiers and to a first distribution network with a first set of client modems; and
- b) a second central modem which is connected to a second diplexer, the second diplexer connected to an output of one of the at least one signal amplifiers and to
15 a second distribution network with a second set of client modems.

5. The architecture of claim 4 wherein the first network access device and the second network access device are cable modems which access the Internet through a connection located at the cable head-end.

6. The architecture of claim 1 wherein a first network access device is in communication with a central server, the central server is in communication with

- 20 a) a first central modem which is connected to a first diplexer, the first diplexer connected to an output of one of the at least one signal amplifiers and to a first distribution network with a first set of client modems; and
- 25 b) a second central modem which is connected to a second diplexer, the second diplexer connected to an output of one of the at least one signal amplifiers and to a second distribution network with a second set of client modems;
- such that one central server serves at least two distribution networks.

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7. The architecture of claim 6 wherein the central server performs protocol conversions so that downstream transmissions are converted from Internet Protocol into a Point-to-Point Protocol.

5 8. The architecture of claim 1 wherein a central server is placed with the cable head-end equipment and connected with the cable head-end equipment such that the downstream output from the cable head-end includes cable television channels, data communications to third party cable modems, and data communications from the central server to at least one network access device.

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9. The architecture of claim 8 wherein the data communications from the central server are in a point-to-point protocol.

10. The architecture of claim 1 wherein at least two network access devices are
15 connected to a first router, the first router is connected to a second router, and the second router is connected to:

- a) a first central modem which is connected to a first diplexer, the first diplexer connected to an output of one of the at least one signal amplifiers and to a first distribution network with a first set of client modems; and
- 20 b) a second central modem which is connected to a second diplexer, the second diplexer connected to an output of one of the at least one signal amplifiers and to a second distribution network with a second set of client modems.

11. The architecture of claim 10 wherein the first network access device is connected to a
25 first network and the second network access device is connected to a second network.